

Statistics 5301 — Exam 1
April 22, 1996
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NAME _____

ID# _____

This exam is open book, open notes; you may use a calculator. Show your work to receive full credit. Use the back if more space is needed. There are some tables at the back of the exam. Each question is worth 10 points.

Questions 1 through 5 relate to the amylase data. **Provide some justification for your answers!**

1. Did the data require a transformation in order to meet the usual ANOVA assumptions? If so, which transformation?

2. Does growth temperature have any effect on the response?

3. How would you describe the effect of analysis temperature on the response?

4. Which factor has the greatest effect on the response?

5. Which effects would you conclude are significant?

6. The data below give women of child bearing age per birth in 1985 for 51 sampling areas in the US divided into 5 regions (data from Lunneborg).

	North East	Mid West	South Atlantic	South Central	West
$\bar{y}_{i\bullet}$	70.12	64.045	67.126	63.321	55.935
n_i	9	12	9	8	13
$\bar{y}_{\bullet\bullet}$	63.48				
MSE	31.53				

Just looking at the data, it would appear that the number of women per live birth is different in the west than in the other regions. Test the null hypothesis that the average number of women per live birth in the west is the same as the average of the other four regional averages.

7. Consider the following MacAnova output. What would you conclude about the significance of the main effects and interactions?

```
Cmd> anova("y=a*b")
Model used is y=a*b
WARNING: summaries are sequential
```

	DF	SS	MS
CONSTANT	1	20552	20552
a	1	60.44	60.44
b	2	140.67	70.34
a.b	2	46.14	23.07
ERROR1	41	450.4	10.99

```
Cmd> anova("y=b*a")
Model used is y=b*a
WARNING: summaries are sequential
```

	DF	SS	MS
CONSTANT	1	20552	20552
b	2	171.44	85.72
a	1	29.67	29.67
a.b	2	46.14	23.07
ERROR1	41	450.4	10.99